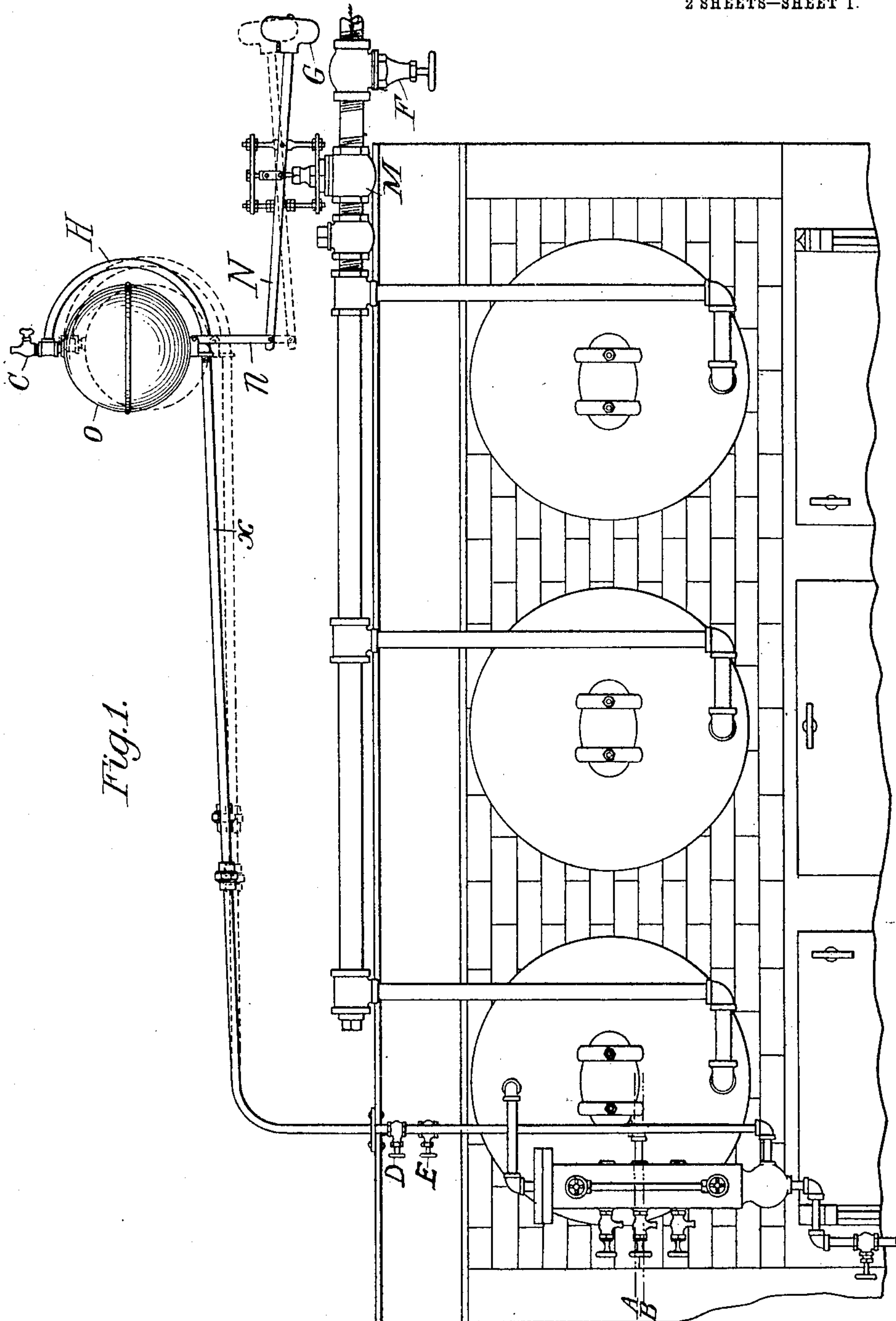


No. 887,406.

PATENTED MAY 12, 1908.

A. F. LOVERING.
AUTOMATIC BOILER FEEDER.
APPLICATION FILED DEC. 22, 1906.

2 SHEETS—SHEET 1.



Witnesses:

W. F. Partridge
Mabel Lovering

Inventor:

Arthur F. Lovering
By his Attorney
Joseph A. Lovering

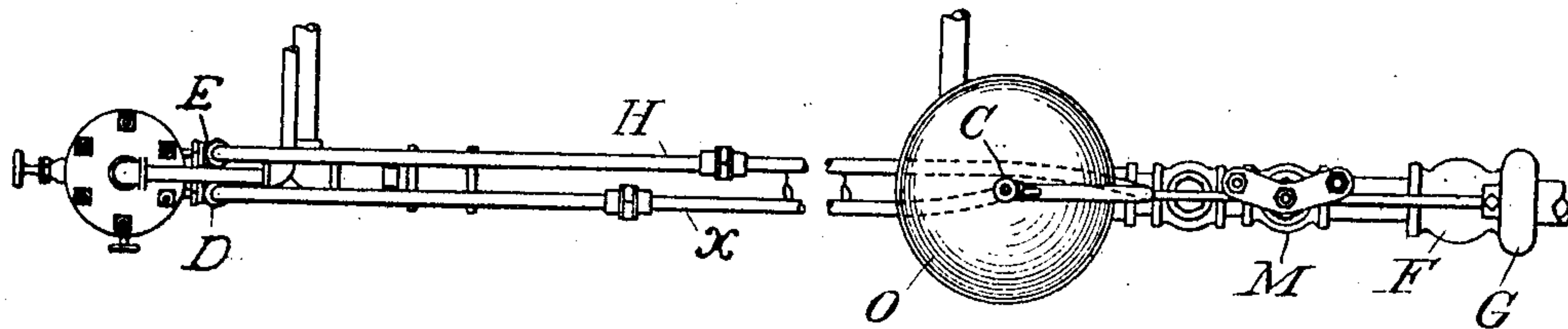
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2 SHEETS—SHEET 2.

Fig. 2.



Witnesses:

N F Hamel
Mabel Lovering

Inventor:

Arthur F. Lovering
By his attorney
Joseph A. Lovering

UNITED STATES PATENT OFFICE.

ARTHUR F. LOVERING, OF FRAMINGHAM, MASSACHUSETTS.

AUTOMATIC BOILER-FEEDER.

No. 887,406.

Specification of Letters Patent.

Patented May 12, 1908.

Application filed December 22, 1906. Serial No. 349,167.

To all whom it may concern:

Be it known that I, ARTHUR F. LOVERING, a citizen of the United States, residing at Framingham, in the county of Middlesex and State of Massachusetts, have invented a certain new and useful Automatic Boiler-Feeder, of which the following is a specification.

My invention relates to a device for operating valves in connection with the water supply for a steam boiler, where the boiler is fed from a source of supply having sufficient force to flow into the boiler when the feed gate is open. This device, which I shall call the automatic feed water controller, is not intended to supply the power for forcing water into the boiler, but only to control the valve or entry gate; opening the valve when the water in the boiler is low enough to need a new supply and closing the valve when a sufficient supply has been admitted to last for a time.

The device is primarily intended to control the valve regulating the water supply to steam boilers, but may be used for other purposes in connection with steam boilers, where it is desirable to have a valve open and close automatically.

I obtain the objects sought by the mechanism illustrated in the accompanying drawing in which the valve M, is the opening and closing gate; and is so proportioned as to open or close in any position with nearly uniform ease regardless of what pressure is maintained inside the valve itself. Therefore a small stem is all that is necessary for opening and closing the gate from the outside.

A yoke with a lever attached and working over a fulcrum is attached to the valve M, as shown in the drawing. On one end of this lever is attached a weight G, with a set screw so that it can be adjusted as desired. The opposite end of the lever is attached to the hollow weight O by a short connecting rod. The hollow weight O is made in two parts and has a seam in the center; it must be steam tight and strong enough to resist boiler pressure. To this weight O is attached two pipes H and X which must be made of some kind of flexible material and also strong enough to resist boiler pressure. Pipe H is attached to the boiler or water column between A and B as indicated on drawing, and it is connected with the weight O through the top near the air cock

C. Pipe X is attached to boiler or water column near its base, as shown in drawing, and is connected with weight O through its bottom. Both pipes H and X are held firmly in place by a fixture attaching them to the boiler or some other stable part of the works just above the valves D and E. All joints in pipes and connections must be steam tight.

Manner of operation.—After steam has been raised in the boiler, close valve D in pipe x but leave valve E in pipe H open; then open air cock C but when steam appears close it again and open valve D in pipe X. Now open the main water gate F in the feed pipe just back of the balanced valve M and you have the automatic feed water controller in operation. If the water in the boiler or water column is down to the point indicated by B, as shown in drawing, the weight O will remain light and empty; but valve M will be open. When sufficient water has passed into the boiler to raise the water in the boiler to the point indicated by A the entrance to pipe H from the water column or boiler will be closed by water. This will prevent steam from entering the hollow weight O and the steam already there will immediately condense causing it to be filled with water from the boiler. The weight O being thus loaded; will now overbalance weight G and pressing down the opposite end of the lever attached to valve M close that valve and stop the water. The valve M will now remain closed until the water in the boiler or water column again leaves the entrance to pipe H uncovered when the water in the hollow weight O will immediately be discharged into the boiler and steam taking its place. The hollow weight O will now be overbalanced by weight G, and the weight O going up as G goes down will open valve M and admit more water to the boiler. Valve M will now remain open until the boiler is again filled up to the point indicated by A when the operation will repeat itself and so continue indefinitely.

Having thus described my invention, its construction and operation, my claim is:—

In an automatic boiler feeder, the combination with a boiler, of a water supply pipe, a valve arranged therein, a valve stem, a lever connected to the stem, a weight arranged at one end of the lever and tending to hold the valve in open position, a hollow weight located above the opposite end of the

lever, a steam pipe, and a water pipe leading
from the boiler to said hollow weight, the
steam pipe being connected approximately
at the water line, and the water pipe below
3 the water line of said boiler, said pipes being
extended upward and thence bent and ex-
tending in parallel relation and approxi-
mately in a horizontal plane to said hollow
weight, the water pipe being connected to
13 the bottom of the weight and the steam
pipe to the top thereof, a link connecting the
hollow weight to the valve actuating lever,
whereby the pipes and lever form a support-

ing means to permit vertical movement of
the weight, the steam and water pipes being 15
of sufficient length to freely flex adjacent the
points at which they are bent to thereby per-
mit rise and fall of the weight substantially
as described.

In testimony whereof I have affixed my 20
signature, in presence of two witnesses.

ARTHUR F. LOVERING.

Witnesses:

EDITH A. DOW,
CHAS. S. RECORD.